Requirements for All Machines

WAC 296-806-200 and WAC 296-806-300

Rule

GENERAL REQUIREMENTS

WAC 296-806-20002

Secure machines designed to stay in one place

You must

- Make sure machines designed to stay in one place are secured so they won't move or change position during use

Exemption:

- Machines that have either rubber feet or foot pads made of nonskid (high coefficient of friction) or similar vibration dampening materials don't have to be secured as long as the machine won't tip, fall over, or walk (move).

WAC 296-806-20004

Protect employees from slipping hazards around machinery

You must

- Make sure employees working around dangerous machines are protected from slipping on smooth, oily, or otherwise slippery floors by providing one of the following types of floor covering:
  - Nonslip matting
  - Grating
  - Nonslip composition flooring
  - Some other effective floor treatment

Reference:

➢ For additional requirements about housekeeping, personal protective equipment (PPE), and work practices, see the Safety and Health Core Rules, Chapter 296-800 WAC.

Requirements for All Machines

WAC 296-806-200 and WAC 296-806-300

Rule

WAC 296-806-20006

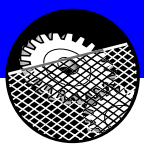
Arrange work areas to avoid creating hazards

You must

- Make sure work areas around machinery are designed with enough space so each operator:
  - Can clean and handle material without interference from other workers or machines
  - Does **not** have to stand in the way of passing traffic
- Provide enough space so employees can bring in and remove materials safely

Reference:

➢ For requirements that apply to aisles and passageways, see WAC 296-24-73505.



Rule

WAC 296-806-20008

Make sure operating controls meet these requirements

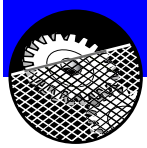
Exemption:

- This rule doesn't apply to constant pressure controls used only for setup

You must

1) Make sure each machine has a control that both:
   - Stops the machine

     and
   - Can be reached by the operator without leaving the operator's position
2) Make sure the operator can easily reach all machine controls without reaching into a hazard area of the machine



Requirements for All Machines

WAC 296-806-200 and WAC 296-806-300

Rule

WAC 296-806-20010

Protect employees from unintentional machine operation

You must

1) Make sure foot-operated controls are located or guarded so that unintentional movement to the "on" position is unlikely.
2) Make sure machines will **not** automatically restart when power is restored after a power failure, if restarting would create a hazard for employees.

Note:

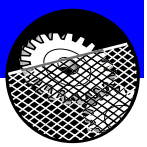
- Operating controls can be protected from unintentional movement by methods such as covers on foot treadles and collars around machinery start buttons.

WAC 296-806-20012

Make sure emergency stop controls meet these requirements

You must

- Make sure emergency stop controls, if required, meet **all** the following:
  - Are red in color
  - Are easily reached from the operator's normal work position
  - Are kept in a good working condition
  - Have to be manually reset before a machine can be restarted



WAC 296-806-20014
Control machine vibration

You must

- Prevent excessive machine vibration that could create a hazard to employees.

WAC 296-806-20016
Prevent overspeed conditions

You must

- Operate tools and equipment within their rated speed.

Note:

- Actions that could cause an overspeed condition include:
  - Installing a more powerful motor
  - Changing or increasing the power source
  - Changing attachment size or type, such as a blade or wheel
    - The attachment speed (rpm) and motor speed (rpm) should match

Requirements for All Machines

WAC 296-806-200 and WAC 296-806-300

Rule

WAC 296-806-20018

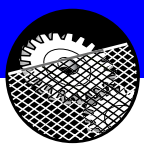
Make sure hand feeding and retrieval tools meet these requirements

You must

- Make sure hand feeding and retrieval tools:
  - Are suitable for the work to be done
  - Don't create a hazard when used
  - Are of a size and shape that will keep the operator's hands outside the hazardous area
  - Are constructed so they won't shatter if they come in contact with the machine tool or tooling

Note:

➢ Hand feeding and retrieval tools, such as push sticks or push blocks, can **not** be used instead of required safeguarding, unless a specific machine requirement allows it.



WAC 296-806-20020

Protect employees who are adjusting or repairing machinery

Exemption:

- This rule doesn't apply if the machine has to be in motion to properly adjust it

You must

- Make sure power-driven machinery is completely stopped before **either**:
  - Making adjustments or repairs
    or
  - Removing material or refuse from the machine

Reference:

- For requirements about maintaining and servicing machinery where the unexpected start-up, energization, or release of stored energy could injure an employee are in Lockout/Tagout (Control of Hazardous Energy), Chapter 296-803 WAC.

Requirements for All Machines

WAC 296-806-200 and WAC 296-806-300

Rule

WAC 296-806-20022

Keep power transmission equipment in good working condition

Definition:

A *power transmission part* is a mechanical component of a system that provides motion to a part of a machine or piece of equipment

You must

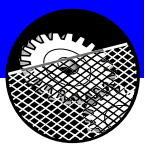
- Make sure power transmission parts are kept in good working condition at **all** times
- Keep bearings free from lost motion and well lubricated

WAC 296-806-20024

Inspect power transmission parts

You must

- Inspect power transmission parts **at least** once every 60 days to make sure that all:
  - Safeguarding meets the requirements of this chapter
  - Parts are in proper alignment
  - Bolts and screws that hold power transmission parts together or support the system are tight



WAC 296-806-20026

Protect employees lubricating moving machinery

You must

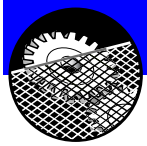
1) Protect employees who lubricate moving machinery by:
   - Providing tools, such as oil cans or grease guns, that have spouts or necks that are long enough to keep the employees' hands out of hazardous areas
   - Requiring employees to wear closely fitted clothing

Note:

➢ Things such as clothing, hair, and jewelry can get caught in machinery and be a hazard on the job.

You must

2) Make sure drip cups and pans are securely fastened to the machinery



Requirements for All Machines

WAC 296-806-200 and WAC 296-806-300

Rule

SAFEGUARDING REQUIREMENTS

WAC 296-806-20028

Safeguard employees from the point of operation

IMPORTANT:

- If a specific safeguarding method in this chapter is required for machinery or machine parts found in your workplace, follow the specific requirement.
- In the absence of a specific safeguarding method required by this or some other chapter, you need to choose a method or combination of methods from the safeguarding requirements found in Safeguarding Methods, WAC 296-806-20042 through 296-806-20058. Examples of safeguarding methods include:
  - Guards
  - Devices
  - Safeguarding by distance
  - Safeguarding by location

You must

- Protect employees from hazards created by the point of operation by using one or more safeguarding methods.

WAC 296-806-20030

Safeguard employees from nip or shear point hazards

You must

- Protect employees from hazards created by nip or shear points by using one or more safeguarding methods.

Requirements for All Machines

WAC 296-806-200 and WAC 296-806-300

Rule

WAC 296-806-20032

Safeguard employees from rotating or revolving parts

You must

- Protect employees from hazards created by rotating or revolving parts by using one or more safeguarding methods.

WAC 296-806-20034

Safeguard employees from reciprocating or other moving parts

You must

- Protect employees from hazards created by reciprocating or other moving parts by using one or more safeguarding methods.

WAC 296-806-20036

Safeguard employees from flying objects

You must

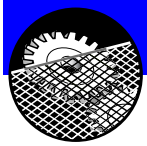
- Protect employees from hazards created by flying objects, including chips, sparks, and fluids by using one or more safeguarding methods.

WAC 296-806-20038

Safeguard employees from falling objects

You must

- Protect employees from hazards created by falling objects by using one or more safeguarding methods.



Requirements for All Machines

WAC 296-806-200 and WAC 296-806-300

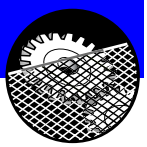
Rule

WAC 296-806-20040

Safeguard employees from moving surfaces with hazards

You must

- Safeguard employees from hazards created by moving surfaces with hazards such as sharp edges, burrs, and protruding nails and bolts.



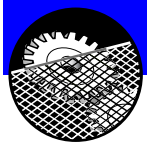
SAFEGUARDING METHODS

WAC 296-806-20042

Make sure guards meet these requirements

You must

- Make sure guards do **not** create additional hazards such as sharp edges or pinch points between the guard and moving machine parts.
- Make sure guards are:
  - Made of durable materials
  - Strong enough to withstand the forces to which they are exposed
  - Securely fastened to the machine, if possible, or to the building structure if they cannot be attached to the machine
- Make sure guards protect employees by doing **both** of the following:
  - Preventing hands or other body parts from reaching through, over, under, or around the guard into the hazard area
    and
  - Preventing objects or debris from falling onto or being thrown towards an employee.
- Make sure barrier guards:
  - Are properly installed, adjusted, and maintained
  - Have no opening at any point larger than shown in Table 200-1, Largest Allowable Guard Opening



-Continued-

WAC 296-806-20042 (Continued)

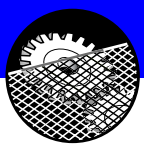
Reference:

- Metal cutting shears are allowed to be guarded with properly applied awareness barrier safeguarding as described in ANSI B11.4-1993, Sections 6.3.3.

Table 200-1

Largest Allowable Guard Opening (inches)

If the distance (A) from hazard to the guard is	Then the opening (B) in the guard or between the table and the guard can NOT be greater than
½ to 1 ½	¼
1 ½ to 2 ½	⅜
2 ½ to 3 ½	½
3 ½ to 5 ½	⅝
5 ½ to 6 ½	¾
6 ½ to 7 ½	⅞
7 ½ to 12 ½	1 ¼
12 ½ to 15 ½	1 ½
15 ½ to 17 ½	1 ⅞
17 ½ to 31 ½	2 ⅛
Over 31 ½	6

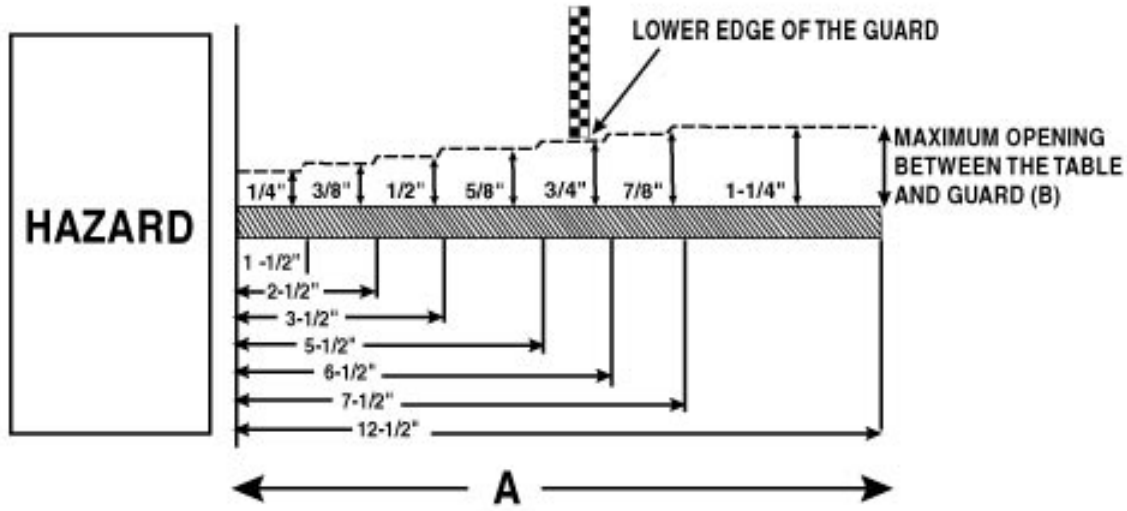


WAC 296-806-20042 (Continued)

This diagram illustrates the information found in Table 200-1. The size of the opening in the guard, or between the bottom edge of the guard and the feed table is small enough to prevent any part of the operator's body from reaching the hazardous area.

Illustration 200-1

DISTANCE FROM HAZARD TO GUARD (A)



Requirements for All Machines

WAC 296-806-200 and WAC 296-806-300

Rule

WAC 296-806-20044

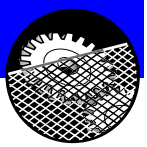
Make sure devices meet these requirements

You must

- Make sure devices used to safeguard employees do either of the following:
  - Stop the motion of a moving part before an employee comes in contact with it and has to be manually reset before machines can be restarted
    or
  - Be designed and constructed to prevent the operator from having any part of their body in the danger zone during the hazardous part of the operating cycle.

Reference:

➢ For more information on installation of safety devices, see Performance Criteria for Safeguarding, ANSI B11.19-2003.



WAC 296-806-20046

Make sure light curtains meet these requirements

IMPORTANT:

All devices must meet the general requirements for devices found in *Make sure devices meet these requirements*, WAC 296-806-20044.

You must

- Make sure light curtains, when used:
  - Respond to the presence of an operator's hand, other body part, or a work piece
  - Have indicators that are easily seen by the operator showing when the device is functioning or has been bypassed.

Note:

➢ Even if a shiny reflective object or work piece is used with a light curtain or other electro-optical device, it should still respond to the operator's hand or other body part

You must

- Make sure only authorized persons can make the following adjustments to light curtains:
  - Variations in operating conditions
  - Fixed or channel blanking
  - Floating blanking (sometimes referred to as floating channel or floating window features)
- Safeguard access to the point of operation that is **not** protected by light curtains.

Reference:

➢ For more information on light curtains and their requirements, see Performance Criteria for Safeguarding, ANSI B11.19-2003.

Requirements for All Machines

WAC 296-806-200 and WAC 296-806-300

Rule

WAC 296-806-20048

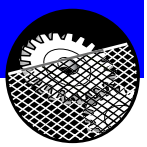
Make sure pressure-sensitive mats meet these requirements

IMPORTANT:

All devices must meet the general requirements for devices found in *Make sure devices meet these requirements*, WAC 296-806-20044.

You must

- Make sure pressure-sensitive mats:
  - Detect the presence or absence of the operator or others
  - Send the stop command and prevent successive machine cycles if any single component fails
  - Are connected with the machine control system so the device's stop signal immediately stops action of the machine tool and requires use of the start control before the machine can begin another cycle
  - Are located so that the operator can **not** reach the recognized hazard before hazardous motion has stopped
  - Have an indicator easily seen by the operator that shows the mat is operating.



Rule

WAC 296-806-20050

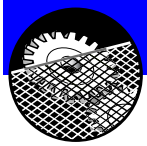
Make sure restraint or pullback devices meet these requirements

IMPORTANT:

All devices must meet the general requirements for devices found in *Make sure devices meet these requirements*, WAC 296-806-20044.

You must

- Make sure restraint or pullback devices:
  - Prevent the operator from reaching into the point of operation or withdraw the operator's hands from the point of operation before motion of the machine creates a hazard
  - Have fasteners, pins, and other items used to secure and maintain the setting of the device applied in a way that minimizes loosening, slipping, or failure during use
  - Are worn inside gloves, if used, so if a glove becomes trapped inside a machine or tool, the device can still remove the operator's hand from the hazard area.



Requirements for All Machines

WAC 296-806-200 and WAC 296-806-300

Rule

WAC 296-806-20052

Make sure two-hand devices meet these requirements

IMPORTANT:

All devices must meet the general requirements for devices found in *Make sure devices meet these requirements*, WAC 296-806-20044.

You must

- Make sure two-hand devices:
  - Protect each hand device against accidental operation
  - Require simultaneous operation of both hand devices to begin the cycle, including the first cycle (automatic mode)
  - Are provided with an anti-repeat feature when used in single cycle mode
  - Have a set of devices for each operator if more than one needs to be safeguarded
  - Are located far enough from the nearest hazard so the operator can **not** reach the hazard before hazardous motion stops.

Reference:

➢ For more information on proper installation of safety devices, see Performance Criteria for Safeguarding, ANSI B11.19-2003.

WAC 296-806-20054

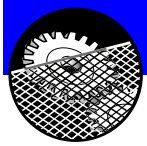
Make sure devices used with barrier guards meet these requirements

IMPORTANT:

All devices must meet the general requirements for devices found in *Make sure devices meet these requirements*, WAC 296-806-20044.

You must

- Make sure movable barrier devices:
  - Return to the open position if they encounter an obstruction while enclosing the hazardous area
  - Are designed so the operator or others cannot reach the hazard by reaching over, under, around or through the device when it is in the closed position.
- Make sure interlocks used with barrier guards do **all** of the following:
  - Stop hazardous motion of machines when interlocks are open
  - Are **not** easily bypassed
  - Are designed and installed so that closing the interlocks won't cause a hazard to employees.



Requirements for All Machines

WAC 296-806-200 and WAC 296-806-300

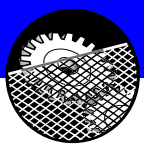
Rule

WAC 296-806-20056

Make sure safeguarding by distance meets these requirements

You must

- Make sure means used to safeguard by distance do both of the following:
  - Prevent parts or material from falling on employees below
    and
  - Separate employees on fixed ladders, stairs, floors, or other walking or working surfaces from the hazard by:
    - More than 7 feet vertically
      or
    - A horizontal distance that prevents employees from contacting or being injured by the hazard according to the distances in Table 200-2.



-Continued-

WAC 296-806-20056 (Continued)

Table 200-2 helps you identify either the required horizontal distance from the hazard to the barricade (B), or the required height of the barricade (C), as long as you know A and either variable, B or C.

Table 200-2

Safe Distances for Fixed Barricades (B)

Height of the Barricade (C)

Height of the Hazard (A)	96	86	78	71	63	55	48	40
96	0	4	4	4	4	4	4	4
86		10	14	16	20	20	24	24
78			14	20	24	28	36	43
71				24	36	36	40	43
63				20	36	36	40	51
55				4	32	36	40	51
48					20	36	40	55
40					12	36	40	55
32						24	36	51
24							20	48
16							12	48
8							8	43

Note:

- The height and distance requirements of Table 200-2 are designed to safeguard workers from a fixed hazard. If a hazard involves flying chips, fluids, parts or materials, the barrier height, distance, and construction may need to be adjusted to provide adequate protection.

-Continued-

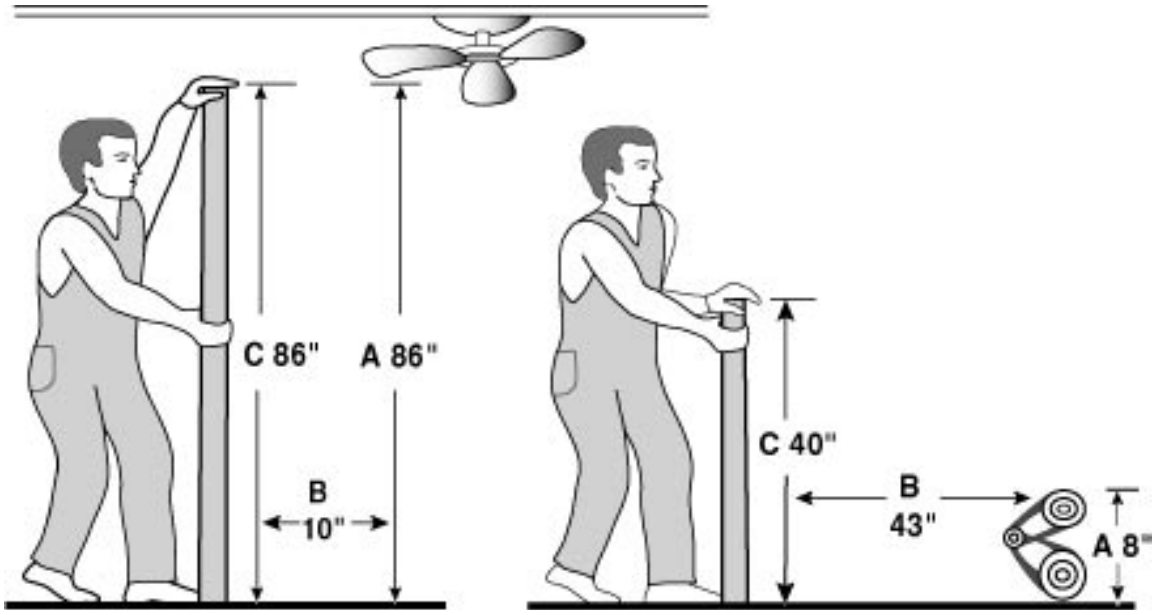
Requirements for All Machines

WAC 296-806-200 and WAC 296-806-300

Rule

WAC 296-806-20056 (Continued)

Illustration 200-2
HOW TO MEASURE VARIABLES FOR TABLE 200-2



Examples:

- If the height of the hazard (A) is 78 inches, and the horizontal distance from the hazard to the barricade (B) is 14 inches, the required height of the barricade (C) is 78 inches.
- If the height of the hazard (A) is 86 inches, and the height of the barricade (C) is 55 inches, then the required horizontal distance from the hazard to the barricade (B) is 20 inches.

WAC 296-806-20058

Make sure guardrails used for safeguarding meet these requirements

Note:

- Guardrails may be used to safeguard:
  - Flywheels
  - Cranks and connecting rods
  - Tail rods and extension piston rods
  - Horizontal belts in a power generating room
  - Clutches, cutoff couplings, or clutch pulleys in an engine room occupied only by an attendant
  - Power transmission parts on a runway used only for oiling, maintenance, running adjustment, or repair work.

You must

- Make sure top rails are:
  - Smooth-surfaced
  - Strong enough to withstand a force of at least 200 pounds
  - Between 39 and 45 inches above the floor, platform, runway, or ramp
- Make sure guardrails have an intermediate rail (midrail) installed approximately halfway between the top rail and the floor, platform, runway, or ramp
- Make sure rails don't extend beyond the end posts of the guardrail and create a projection hazard
- Make sure toe boards, if required by this chapter to safeguard a machinery hazard, are:
  - At least 4 inches high
  - Securely fastened in place with no more than 1/4 inch between the bottom of the toe board and the floor, platform, runway, or ramp
  - Made of substantial material that's either solid or that has openings in the material no larger than one inch.